

Third report

upon a

Course of Study for

Elementary Schools



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## THIRD REPORT

UPON A

# COURSE OF STUDIES FOR ELEMENTARY SCHOOLS.

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## REPORT.

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In previous reports upon a course of studies for elementary schools\* I presented some conclusions based upon a careful inquiry respecting the opinions of prominent educators and the practices of types of the best schools in this and other countries. These conclusions relate to (1) the age of admitting pupils, (2) subjects of instruction, (3) the grouping of subjects, (4) the relative amount of time which should be given to each group, (5) correlation of studies, (6) departmental instruction, (7) elective studies, and (8) the grading and promotion of pupils. There remain to be considered four other features of a course, viz., the scope, relations, sequence and limitations of the various subjects.

The consideration of these features will be confined mainly to suggestions and recommendations for the making of a course, followed by a brief outline of a general course. The conclusions reached are drawn from observation and experience, supplemented by a careful study of some of the best courses in the country and of various general and special reports that have been made.

Before referring to the special subjects of a course, I desire to direct attention to some general features of existing courses of studies and practices relating to them.

My observations of schools, coupled with the present investigation of courses of studies, have led me to believe that the plan of putting before teachers a detailed statement of all they are expected to accomplish during fixed periods of time, is wrong in principle, as it is harmful in practice. Some courses even go so far as to point out the exact pages of the text-book which are to be gone over in a given period, the presumption

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\* See reports of Massachusetts Board of Education, 1895-96, pp. 437-480, and 1896-97, pp. 279-314. These reports are also printed in pamphlet form, and will be referred to in this report as "Preliminary Report" and "Second Report."

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being that the topics included in those pages constitute the entire work of all the pupils. The leveling system is complete where examinations based upon these requirements are given by some one other than the teacher. Nothing in this inquiry has been more evident than the fact that much more should be done than is now generally done to reach individual pupils, by giving them instruction and training suited to them both in kind and amount. The excessive number of pupils to a teacher found in most schools renders it impossible to accomplish this result in any degree satisfactory to the best teachers. The brighter and quicker pupils, as well as the duller and slower ones, are not reached in the way they should be reached. The present generally followed plan of keeping together for long periods all the pupils of a large class upon the same kind of work is harmful alike to the quicker pupils and the slower, — to the former in undue suppression and lack of stimulation to healthful effort, and to the latter in discouragement and superficialness.

It is well known that the tendency of unwise and unskilled teachers is to emphasize the quantitative rather than the qualitative side of their work; to regard the work of teaching mainly as an assistance to the pupils in obtaining a certain amount of knowledge or information, and, as this can be measured best by the pages of the book or the per cent. marks in an examination, these standards are uppermost in their minds. The method of apportioning the subjects and topics in a course of studies so that the attention is fixed mainly upon the amount to be learned tends to strengthen these convictions of unwise teachers and places unnecessary restraints upon wise ones. It may be said that, whenever a course of studies gives a great degree of freedom to teachers, there is likely to be a neglect of essentials and a weakening of work that may be called consecutive. But this can be true only of unwise and unskilled teachers. With those teachers who understand what all their pupils most need and who know how they are best to be provided with it, the faults above alluded to are not likely to exist. To them the fixed bounds of non-essentials stand in the way of a proper adjustment of the work to the needs of the pupils. In matters only that are essential or important should limitations be indicated in a course of studies. But even the limits of the

essentials of knowledge might well be omitted in a course to be followed by one teacher alone. It is only in a system of schools where two or more teachers are employed that a limited plan or program of studies is needed. The fact that the non-essential subjects are almost limitless in number and kind renders it impossible to make a selection of such subjects which will be suitable alike for all schools and classes or for the pupils of all teachers.

For these reasons, a course of studies intended for the schools of a large section, as of a county or State, should first of all be general in character, and be confined largely to the designation of subjects that are essential or important. This course may well be used as a basis of a more detailed course for a comparatively small group of schools. Moreover, the subjects assigned to particular times should be so arranged as to permit a division of the school into groups or sections of pupils of different degrees of ability. Further, the subjects should be so arranged as to permit extra work to be done by individual pupils. This feature of a course was mentioned in one of the recommendations contained in the report upon the grading and promotion of pupils. It was as follows:—

The course of studies as far as possible should be made so as to assist the teacher in adapting the work assigned and called for to the abilities of all pupils in every class. This can be done by designating important or principal features which must be taken by all for a proper understanding of the subjects, and by suggesting supplementary work that may be done profitably by pupils after they have acquired the necessary portions, and while they are waiting for others who have not acquired them.\*

One other feature of a general course of studies should appear,—that of giving all subjects such a place as will permit a rational and orderly correlation of the studies not only of a single group but also of all groups so far as it is possible to do this. Upon this and other points the recommendations of the Second Report are as follows:—

1. The selection of topics should be so made as to be of general use. This general course to serve as a basis for more detailed courses in given localities.

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\* Page 36 of Second Report.

2. The selection of topics should be made from all groups, so that at least one subject of every group will be presented for a given time.

3. The selection of topics from each group for a given time should be made with reference to their logical relations to the topics of all other groups, so far as the nature of the subjects and a proper treatment of each will permit.

4. No reference to a centre or to centres of correlation need be made in the general course, it being understood that each subject taught will be the centre, with which all other subjects at the time will be correlated.

5. No reference to the place or time of isolation in teaching need be indicated, since that and all other matters relating to methods of treatment will be left to the teacher.\*

It may be necessary to designate periods of time during which prescribed work must be accomplished, but it should be done in such a way as to permit the elastic system of grading and promotions recommended at the close of the Second Report.† This may be done by designating the *minimum* of work which is to be done within certain periods, and by placing in a parallel column the time at which all that goes before shall be completed. The outline of subjects thus presented will be only the essential or most important work required to be done.

Some superintendents follow the plan of placing a general course before their teachers, and of supplementing this course by specific directions in monthly grade meetings. This plan succeeds well where too many details are not given, and where the independence and originality of the teachers are not interfered with. It has the advantage of affording opportunity for constant adjustment of work to new and varied conditions, and of assisting untrained or inexperienced teachers in a proper interpretation of directions. This plan is especially advantageous for directors of special subjects, like drawing and nature study, inasmuch as it gives opportunity for instructing teachers in technical details which are not well understood by them.

The plan of issuing separate pamphlets or slips, containing the prescribed work for each subject in all the grades, has the advantage of bringing before each teacher a statement of what is expected to be done in a given subject in all the grades, thus

making it easy for every teacher to know what every other teacher is expected to do,—a necessary condition for good work. This practice of teachers is likely to be discouraged and the work narrowed by following the plan adopted by a few superintendents, in presenting the prescribed course of each grade in a single pamphlet.

The features of a course of studies which I shall consider briefly in this report are: first, the scope or aim and range of subjects to be presented under each group; second, the relation which the subjects of a group bear to each other and to the subjects of other groups; third, the sequence or order in which the various subjects or parts of subjects should be presented; and, fourth, the limitations both in time and substance which should be made in each branch of study.

The aim or purpose of a given subject may be general and remote, or specific and immediate; a course of studies has to do mainly with the former, the latter aim belonging more to a statement of methods which are supposed to be known by teachers. The range of topics outlined in each branch of study will be determined partly by the aim and partly by the conditions under which the school is carried on,—these conditions being the number of pupils, the number of classes, the length of the course, the number and character of the teaching force. It is understood, of course, that, as “preparation for complete living” is the end of education, so all subjects and parts of subjects that do not contribute to this end are to be excluded from the course.

The subjects of study should be so placed in a course as to assist the teacher to correlate them in teaching; that is, to present them in right relations, by which each fact of knowledge or information acquired shall be fortified and enriched by others, and by which good habits of thinking shall be encouraged. So far as possible, the relation of each subject to its use, and especially to its use in life, should be indicated.

The sequence or order in which the various topics should be presented is determined by their relations of dependence one upon another, and by the natural order in which the mind acts. The sequence of subjects in a course should not be so marked or finely drawn as to cause the teacher to think more of the

relation or dependence of subjects one with another than of the relation of each subject to the mind and life of the child.

The limitations of any branch of study in respect to time and subject-matter will be determined largely by the relative importance of that branch or of the subjects of that branch as a means of accomplishing the ends to be desired. Other limitations are those which are determined by the length of the session and school year and by the number of classes and pupils to a teacher.

The percentages contained in the tables of the Preliminary Report of this series are intended to show the relative importance of the various subjects, and the time program on page 44 of that report shows the actual time given to each group of subjects, on the supposition that the school day is five and one-half hours long, and that there are five school days in the week. For future reference in the apportionment of time limits to separate subjects, that table is here reproduced, with change of groupings made in Table XV., in which literature is classed with language instead of history. The table is as follows:—

*Time Program, showing the Number of Minutes a Week spent in Recitation by a Pupil or Group of Pupils in Five Groups of Subjects; also the Number of Minutes a Week given to Opening Exercises and Recesses and to Study in School.*

GROUPS OF STUDIES.	Sub-primary.*	Grade 1.	Grade 2.	Grade 3.	Grade 4.	Grade 5.	Grade 6.	Grade 7.	Grade 8.
I. Language and literature, . . . .	348	378	378	371	312	320	320	380	380
II. Mathematics, . . . .	72	108	108	146	156	160	160	184	230
III. Elementary science, . . . .	240	108	108	146	195	200	200	184	138
IV. History, . . . .	120	90	90	97	117	120	120	172	172
V. Miscellaneous, . . . .	420†	216	216	215	195	200	200	230	230
Opening exercises, physical exercises and recesses, . . . .	—	250	250	225	225	200	200	200	200
Study in school, . . . .	—	500	500	450	450	450	450	300	300
Total school time, . . . .	1,200	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650

\* Figures in this column indicate the number of minutes spent in recitation and busy work taken together.

† Including physical exercises, games, kindergarten occupations, etc.

It should be understood that the figures in the above table represent the amount of time given in recitation only by a

pupil or a group of pupils. They do not express the amount of time given to study, which of course will depend upon the number of sections in a room and upon how much the sections recite together.

In considering the five groups, the subjects of scope, relations, sequence and limitations will be set off by figures in the order named.

#### GROUP I. — LANGUAGE.

1. Language is the expression of thought. The term as used in the school curriculum is intended to mean the expression of thought in words. As a subject of instruction, it relates to getting thought by means of the printed or written page, and to expressing thought both by speaking and by writing. Language, therefore, includes upon the practical side reading and composition. Upon the theoretical side it includes grammar, rhetoric and logic, the elements only of which should be taught in the grammar school, and always in close connection with reading and composition. In some schools a foreign language may be taught during the last years of the grammar school course, the subject being offered as an elective for those who can carry on the regular English branches.

The immediate aim in language teaching is the power to gain and communicate ideas through written or spoken words. This will involve (*a*) power to read intelligently and (*b*) power to speak and write correctly and effectively.

The reading must include, first, a mastery of the symbols, that is, learning to read; and, second, such companionship with and study of good literature as shall develop power to understand and appreciate the best in literature.

The power to speak and write correctly and effectively involves, first, the mastery of written and spoken forms in accordance with accepted usage; second, analysis of language to discover the rules of usage; and, third, constant practice in speaking and writing, both before and after such analysis.

While the elementary course in grammar has for its chief end correctness, it may also include some features of effectiveness, such as clearness, conciseness and force. The most important fact to be kept in mind is that the study of this subject in the grammar school should be elementary and very

practical, the aim being to teach principles by which the pupil is enabled, first, to understand the language of literature; and, second, to express his thoughts in some measure as they should be expressed. An incidental but by no means unimportant end in the study of grammar is mental discipline,—a power of the mind to generalize, to make rules from facts, and to apply principles and rules to practice.

2. It is plain to see that all forms of language as branches of study are closely related to one another and to nearly all other branches. The forms of expression in the reading books become models for imitation and practice in all departments of composition work, which serves both as a means and as an end of grammar and rhetoric. The relation of the theoretical side of language to practice both in reading and in writing should be indicated by prescribing practice in analysis of sentences and in constant application of the rules of syntax most frequently violated.

The work in composition should be closely related to the pupils' thinking; and, as the regular subjects of study are supposed to occasion thought, they therefore constitute a good basis for language in the recitation. Moreover, the regular studies, especially geography, history, science and reading, should furnish topics constantly for composition.

Some of the most obvious relations which the branches of this group have with one another and with other subjects of study are matters of apperceptive teaching, which every good teacher understands, and which therefore need not be indicated in a course of studies.

3. In securing a mastery of forms in language, a certain definite order should be followed. In learning to read, that order is governed by a well-known principle of proceeding from a vague knowledge of the whole through analysis and synthesis to a clear knowledge of the whole. While a course of studies may not give the steps by which this principle is observed, it may properly state that the teaching should begin either with words alone or with words in sentences, and that analysis and synthesis of words follow in natural order. It may also state that the first words and sentences should be read from the blackboard, and afterwards from the chart and from the first readers. The order to be followed at this stage in the

selection of reading material is sufficiently indicated by the ordinary first and second readers. The order of selection after the pupils have acquired skill in reading should be determined by the tastes and abilities of the children, the selection to be made from given lists of books.

The sequence to be followed in the technique of writing may be sufficiently indicated by stating that during the first two years much copying of good texts should be done, beginning with words whose letters are easily made, as *man* and *cow*, and proceeding by degrees to words more difficult to write. Some courses prescribe much practice with single letters to be taken up in a given order.

In spelling, it appears to be the custom in the best courses to prescribe some oral spelling for the lower grades, the main attention, however, to be given to writing words in sentences. The words selected for drill in these grades are to be found in the regular reading books. Beyond the third grade, in addition to the words used in the composition exercises, lists of words such as are found in a good spelling book may be used with profit for dictation, the words to be written both singly and in sentences.

English grammar may be regarded as one of the few strictly sequential subjects of the elementary course. Each topic should lead up to the next, and all should have distinct reference to the ends already pointed out. The following general outline shows the order which may be pursued in an elementary study in this subject:—

- (1) The sentence and kinds of sentences defined.
- (2) Subject and predicate, simple and complete.
- (3) Parts of speech.
- (4) Limiting phrases and clauses.
- (5) Nouns,— kinds and forms.
- (6) Pronouns,— kinds and forms.
- (7) Rules of syntax, respecting case of pronouns.
- (8) Verbs,— kinds and forms.
- (9) Rule of syntax, respecting the form of the verb.
- (10) Adjectives,— kinds, forms and uses.
- (11) Adverbs,— kinds, forms and uses.
- (12) Prepositions,— uses.
- (13) Conjunctions,— kinds and uses.

4. The amount that can be done in the various language subjects will depend largely upon the grade and natural abilities of the pupils. The exact amount to be done in some subjects should not be prescribed, while in others the amount prescribed will indicate the least that should be done in a given period, with a provision for sufficient time to permit classes or individual pupils to do as much as they are able to do.

At the end of the second year the pupils should have so far mastered the symbols of reading as to read easily at sight any ordinary second reader. To accomplish this, several first readers and several second readers should have been read through during the two years. After the second year the reading should be carried on in the two lines already indicated, an average of ten pages a week of each kind being required in all grades. It should be remembered that this is the minimum required, and does not include the amount of reading done at home or the extra reading by individual pupils. In most schools probably the limit set is no more than half of what can be well done.

Except in special instances, no set exercises in writing should be given after the fifth year. Whatever is needed to secure legibility and rapidity of writing after this time should be done in connection with the composition and dictation work.

Most of the special instruction in spelling should be given during the first six years. With the exception of occasional reviews, the work in this branch during the last two years of the course should be confined to the correction of words misspelled in the composition and other written exercises.

The limits in written language are difficult to define. It is understood that more depends upon the quality of work done than upon the quantity; and yet it is manifestly the latter feature only that can be presented in a course of studies. An average of ten lines a day of carefully written original work during the entire course beyond the second grade, and an equal amount of dictation for instruction in punctuation, spelling, etc., from the third to the sixth grades inclusive, should be the minimum of written work required, it being understood that monthly compositions should be required of all pupils in the three highest grades.

In designating the subjects of this group, no mention was

made of memorizing choice selections of poetry and prose. While such an exercise may be brought into close connection with the reading and dictation, particular mention of it should be made in the course. An average of at least ten lines a week should be required to be memorized by pupils of all grades, it being understood that the selections memorized shall be of a high order of literary merit, and adapted to the capacity of the children.

The necessity of limiting the study of grammar in the grammar school to the elements of the study and to its use in analysis and syntax has been referred to. Only those properties of the parts of speech should be required to be learned that are needed for analysis of sentences and for a proper understanding of the rules of syntax. These rules should be limited to rules which are most commonly violated. Not more than ten rules should be made and learned, but they should form the basis of constant practice in the construction of sentences. These and other limitations of the subject appear in what has been said upon the sequence of topics to be studied.

Where there are so many branches in a group as are included in this group, it may be well to designate approximately the amount of time to which the recitation in each branch should be limited. For example, if the recitation time for the language studies should be as given on a previous page of this report, the allotment for each branch may be based upon that time, as shown in the following:—

*Time Program, showing the Number of Minutes a Week spent in Recitation by a Pupil or Group of Pupils in Reading, Writing, Spelling, Composition and Grammar.*

SUBJECT.	Sub-primary.	Grade 1.	Grade 2.	Grade 3.	Grade 4.	Grade 5.	Grade 6.	Grade 7.	Grade 8.
Reading, . . . . .	198*	190	190	150	120	120	120	120	120
Spelling, . . . . .	100	50	50	50	50	50	200	160	160
Writing, . . . . .		60	60	75	60	60			
Composition, . . . . .	50	78	78	96	82	90			
Grammar, . . . . .	-	-	-	-	-	-		100	100
<b>Totals,</b> . . . . .	<b>348</b>	<b>378</b>	<b>378</b>	<b>371</b>	<b>312</b>	<b>320</b>	<b>320</b>	<b>380</b>	<b>380</b>

\* Including story-telling.

It should be understood that the above figures are only tentative and approximate, and are given merely to show how an apportionment may be made under given conditions. It should be understood also that the time given is the recitation time only of a pupil or group of pupils. The time for writing at the seat outside of recitation in copying or composing is not counted. One advantage as a saving of time which composition, spelling and writing have over some other subjects should be taken into account, and that is the practicability of having all the pupils of a school recite together.

#### GROUP II.—MATHEMATICS.

1. Mathematics, or the knowledge of quantity and space relations, is taught both for its practical and for its disciplinary value. In the elementary schools it is taught mainly as an art, although the foundations of mathematical science are laid throughout the grammar school course, and in the upper grades something of the science itself is taught. The department chiefly pursued in the elementary schools is that of arithmetic, the elements of geometry and algebra being taught in the upper grades. To these is added a simple form of book-keeping, which may be regarded as an extension of the practical side of arithmetic.

Arithmetic is a knowledge of numbers, their expression, relations and operations. The numbers to be learned are integral and fractional, simple and denominative. So much of this knowledge should be acquired as will help the pupils to solve all the ordinary problems of daily life, and at the same time to serve as a means of mental discipline. The scope of arithmetic in successive grades will be determined largely by the power of the pupils to grasp new relations and conditions. In recent courses a broad basis of subjects has been prescribed in the lower grades, including fractions (both common and decimal), percentage and measurements. The two kinds of work, computations with abstract numbers and work in practical problems, should be presented in all grades, the amount of the former decreasing and of the latter increasing in successive grades.

The aim of geometry in the grammar school is chiefly to supplement the course in arithmetic, and to furnish a good basis for instruction in mechanical drawing and manual training. The work required should be both constructive andventional, supplemented by as many simple demonstrations as circumstances will permit, the aim being to make the work as practical as possible.

The design of algebra in the grammar school is to give pupils a general idea of numerical relations and operations. Besides furnishing short and easy solutions of problems which are in arithmetic quite difficult, algebra gives pupils the power to state in general terms the conditions of a problem and the process of its solution, and thereby to deal with formulæ and rules more easily than by arithmetic. Moreover, the elementary work in algebra may be so arranged as to give support to the higher form of the study in the high school.

Bookkeeping may be regarded as only one of the many practical applications of arithmetic. Its end in the grammar school is ability to keep accounts which would be ordinarily needed by a farmer, mechanic or small retail shopkeeper. Incidentally there will be acquired in the study some knowledge useful in higher forms of bookkeeping.

2. The close relations of the various departments of mathematics to one another are apparent. So close are these relations in the early stages of algebra and geometry that the subjects may be said to be continuous rather than discrete. This is especially true in many kinds of practical work in which arithmetical processes are shortened by the use of algebraic symbols, and are practically applied in geometrical measurements.

The relation of the subjects of this group to other subjects of study is not so close as to make it necessary to bring them together constantly. Yet the facts of geography, history and elementary science may be sometimes employed in arithmetical operations, to the advantage of all the subjects involved.

3. While it is true, as has been said, that there should be a broad basis of subjects in the lower grades, there is a progressive order in the operations to be performed with numbers which should be prescribed in a course of studies. This order

has to do with the relative complexity of processes and also with the size of the numbers. In integral numbers, the work prescribed should be in successive steps, as follows: (a) from 1 to 10, (b) from 1 to 20, (c) from 1 to 100, (d) from 1 to 1,000, (e) from 1 to 1,000,000, (f) unlimited. In fractional numbers the fractional parts of numbers should first be taught almost from the beginning, and proceed in the third grade with fractional units, using in succession halves, fourths, eighths, thirds, sixths, twelfths, ninths, fifths, tenths, sevenths and elevenths. Decimals begun as early as the fourth grade should be taught by steps from tenths, hundredths and thousandths, which are the only decimals used for one year, to decimals of a lower denomination. Denominate numbers should be taught from the very beginning, the order of instruction being generally from measures most familiar to those that are less so.

The order of teaching numbers of all kinds should be first with objects and afterward without objects, and also first without figures and afterward with figures; the warning being expressed that too much dependence should not be had either by using the objects too long or by employing figures unnecessarily in the solution of problems.

The sequence of steps in algebra and geometry will be indicated later, when their limitations are treated.

4. The time allotted to arithmetic should be given mainly to what may be called the essentials of the subject, or to such work as will be found useful in everyday life. The following topics will indicate the degree of restriction that may be made: (1) Correctness and rapidity in adding, subtracting, multiplying and dividing. (2) Ability to work without the aid of figures in all operations, to 100 in whole numbers, to twelfths in common fractions and to thousandths in decimals. (3) Knowledge and skill in the use of such denominate numbers as are used ordinarily in buying and selling and in keeping accounts. (4) Knowledge of percentage and of the simple applications of percentage, such as are needed in ordinary business affairs. (5) Knowledge of geometrical measurements, so far as to perform problems involved in the ordinary affairs of life. It should be understood that, if more is done than is comprised in the above outline, it should not be at the expense of thor-

oughness in these subjects. It is believed that a large part of this work can be done in the first six grades. During the last two grades one or two lessons a week might be given to the more difficult problems involved.

The geometrical exercises of the grammar school should be limited to work in mensuration carried on in connection with arithmetic, and to exercises of a concrete and experimental kind. The following outline in mensuration, followed in the Springfield, Mass., course, sufficiently indicates the needed limitations of this part of the subject:—

*A. Surfaces.*—(1) Parts, (a) number of sides, (b) relative direction of sides (whether parallel, perpendicular, etc.), (c) angles. (2) Comparison with other surfaces as to (a), (b) and (c). (3) Length of perimeter or circumference. (4) Area.

*B. Solids.*—(1) Parts, (a) number of faces, (b) kinds of faces (plane or curved), (c) number of edges, (d) relative direction of faces (whether parallel, perpendicular, etc.). (2) Comparison with other solids as to (a), (b), (c) and (d). (3) Length of all the edges. (4) Surface area. (5) Volume or solid contents.

The limitations of work prescribed in experimental and constructive geometry should not be too strictly drawn. The better way will be to present an outline from which teachers may select work adapted to the ability of their pupils. Such an outline may include: (1) Definition of volume, surface, line, angle. (2) Definitions of various kinds of lines. (3) Definitions of various kinds of angles. (4) Division of line into any number of equal parts. (5) Construction of angles of various magnitudes. (6) Definitions of various kinds of triangles, parts, etc. (7) Problems relating to angles and sides of triangles. (8) Definitions of quadrilateral and kinds of quadrilaterals. (9) Problems relating to angles and sides of parallelograms. (10) Definitions of pentagon, hexagon, heptagon, etc. (11) Problems relating to the construction of polygons. (12) Problems relating to the division of polygons. (13) Problems relating to the construction of similar polygons. (14) Definitions of circle and parts of circle. (15) Problems relating to diameter, circumference, arc, chord, secant and tangent. (16)

Definitions of various kinds of volumes. (17) Problems in relation to the surfaces of volumes. (18) Problems in relation to the solid contents of volumes.

The problems indicated in the above outline may be either concrete and constructive, or demonstrative, depending upon the ability of a class or of the individual pupils of a class.

If the purpose of algebra in the grammar school is as indicated in a previous paragraph, its limitations might be somewhat as follows: (1) Algebraic notation. (2) Simple arithmetical problems, solved by algebra. (3) Addition, subtraction, multiplication and division. (4) Factoring of simple algebraic quantities. (5) Reduction of fractions. (6) Resolving of equations containing one and two unknown quantities. (7) Practical problems involving the foregoing.

### GROUP III.—ELEMENTARY SCIENCE.

1. The immediate end of all the studies of this group is a knowledge of nature, including man and all that is below man. The term nature study in recent years has been made to cover the study of plants, animals and minerals, and the elementary work done in physics and chemistry. This group also includes physiology and hygiene and geography.

While it may be necessary in nature study to lead the pupils to learn through observation the facts of nature, they will learn them not for their own sake, nor mainly for the use they will make of them later in the study of science, but for the habits of observation which the lessons will help to form and for the abiding love of nature which they will help to arouse. These two ends, therefore,—the formation of habits of observation and the arousing of a love for nature,—will determine largely the character and extent of the study. It will include in their appropriate season the observation of minerals, plants and animals, and some of the more apparent physical forces. These observation lessons will fail to produce the desired ends if they stop with a knowledge merely of what is observed. The interpretation of phenomena is of more value than the mere observation of them as facts. The adaptation of parts of animals and plants to the uses they perform will early become an object of inquiry. It should be observed that, while a love for nature

is the primary end of nature study, it cannot be reached by simply talking about the objects observed. Such lessons may drift into mere sentimental reflections of little value. The facts must be learned not by reading or hearing, but by observing, and those facts should be reviewed frequently enough to be readily brought to mind.

The study of physiology and hygiene includes in its scope such knowledge of the anatomy of the body, and the uses of the various parts as will help the pupils to have respect for the body and to keep it in health and strength. The study should be especially helpful in guarding against the dangers of the use of stimulants and narcotics.

Through the study of geography the pupils acquire a knowledge of the earth as the home of man. There are two elements, therefore, of this branch of study; first, nature, in making the earth suitable for human habitation; and, second, the people, in making it a place in which all the activities of life are carried on. So far as possible, the pupils' knowledge of the earth should be interpreting knowledge, or knowledge by which they may understand the relations to human life of its various features, such as climate, surface, soil, etc.

2. The facts acquired in nature study are closely related to the primary facts of geography; indeed, many of the facts of nature study and geography are identical. The subjects of study in these two branches should therefore be arranged in the course with reference to purposes of correlation; and where it is possible the relations should be made to appear, as, for example, the effects of running water as a topic of nature study, and the study of relief forms as a topic of geography.

The relations also of one or both of these branches to arithmetic and history should be indicated. Probably no subjects in the course will be found to be more serviceable for composition and for drawing than these. If these relations are not indicated in the course, opportunity at least should be afforded for abundant practice in expressing in writing or in drawing the facts acquired.

In the lower grades resemblances and differences of the human structure and that of the lower animals should be objects of study, and in the higher grades the connection of

the facts of anatomy and physiology with those of chemistry and physics should be made to appear. In all grades the relation of parts of the body to uses and of uses to health and strength should be shown.

3. The allotment of work in nature study to be done in a given time, whether it be for a year or a day, should be determined by the pupils' natural powers, both of observation and of interpretation. With young children, little is gained by establishing a fixed order of presentation. In general, it may be said that the observations should be made first "in the large" and afterward more minutely; but, if children are interested in the parts of an object very early in their observations, attention should be given to them, especially if the interest centres in the uses of the parts. It is always a safe rule to teach those things which will best serve as interpreters of other things of value for the child to know. On the same principle, a clear and definite knowledge of home surroundings is necessary to a proper knowledge of distant features and conditions. A knowledge by observation of a hill range will be the means of interpreting the distant mountain range described in the book. As far as possible also the logical order should be followed in teaching the various topics. The situation and surface of a continent or country may determine to some extent the climate and rainfall,—a knowledge of which helps the pupils to infer what the productions and the occupations of the people are. In anatomy and physiology, the practice in the best schools of deferring the teaching of the internal structure of the body until the later years of the grammar school seems wise.

4. The two chief ends of nature study should be kept in mind in determining the amount to be done. To form good habits of observation and to acquire a love of nature, there should be no forcing of acquisition. In no study will it be found more necessary to be led by the natural aptitudes and desires of the children than in the study of plants, animals and minerals. While it may be well to set before the teachers a wide field for observation, it should be understood that such selection of the work assigned may be made as will be best suited to given conditions. Again, a broad range of topics will furnish the needed extra and optional work for some pupils already spoken of.

While it is true, as shown in a previous report,\* that nearly all the best schools are giving attention to nature study or elementary science, there is a great difference in the amount and kind of work attempted. In some places, largely through the efforts of a superintendent of schools, especially interested in the subject, and a special teacher, the amount of ground covered is ten times that covered in other places. One superintendent reports recently that his schools even in the higher grades do but little more than give the pupils a knowledge of the common flowers and trees. But it should be remembered that the highest ends of the study do not depend upon the number of facts acquired. Here is an additional reason for making the requirements elastic.

#### GROUP IV. — HISTORY.

1. The place and scope of history as a branch of study have materially changed in recent years. Instead of occupying, as it once did, a small part of the last year or two of the grammar school course, it is now in the best schools begun in the first year and carried on throughout the course; and, instead of being a dry and profitless study of wars and dates, it has come to be regarded as a study both pleasureable and useful as a means of culture. According to this later view of the subject, its purpose from the first should be to inspire the pupils with high ideals of life, both as citizens and as members of society. Moreover, to lead the pupils to acquire a taste for history, the subject should be made interesting from the first. Myths, fairy stories and stories of semicivilized and colonial life should be told to and read by the children in the lower grades, to be continued each year by the reading of stories of biography and of American history in chronological order in the middle grades, and by the study of English and American history in the higher. All phases of social, civil and institutional life are to be presented to the children in forms suited to their interest and capacity. Thus we see that history, which is a record of the growth of a people from their earliest state to the present, includes biography and civil government as well as history proper.

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\* Preliminary Report, pp. 7, 8.

2. As history teaches all sides of life, it stands in close relation to all the other studies of the school which are supposed to be a preparation for life: to arithmetic, in furnishing material for computations; to science, in showing the analogies of the evolution of the race and that of the individual; to geography, in the use of charts and maps, and in furnishing a basis of comparison whereby the present conditions of social and civil life are better known; to literature, in providing the basis of much of the finest forms of the oration, and the ballad, the drama and the epic; and to drawing and language, in awaking thoughts that deserve the pupils' best efforts of expression.

While most of these relations cannot appear in a course of studies, they must be considered in giving history its proper place. In literature especially should the close relation of history be recognized in the course of studies. There are phases of history that can best be known through literature, as there are forms of literature that can be fully interpreted only by a knowledge of history.

3. While the order of topics will depend somewhat upon the interest and capacity of the pupils, there is now a generally recognized order of presentation which should be embodied in a course. The first year or two may be given to the telling and reading of folk and fairy stories, myths and fables. These should be followed by reading stories of Indian and early settlement life, supplemented by biographical stories. As soon as the pupils are ready for it, and before the consecutive reading and study of American history are begun, attention should be given to interesting facts of local history, such as scenes of celebrated events, early settlers and well-known traditions. Consecutive topical study in connection with the reading of both American and English history should be prescribed for the last years of the course.

4. The limitations of subject-matter in history should be determined largely by the limitations of time and by the demands of other subjects. Not even a minimum of requirements should be prescribed, so far at least as such requirements are made a basis for marking or examinations. In this, as in no other subject, may the amount read and studied be adapted to the abilities of each individual pupil. If the work required to

be done be given out and recited by subjects or topics, each pupil may learn as much of each subject or topic as time and ability will permit. The course therefore should be so arranged as to permit the greatest degree of freedom in teaching the subject. If this is done, and examinations have their proper place, the teachers alone will be responsible if the pupils have not a loving interest in the subject,—not only while they are being taught, but also after they have left school.

#### GROUP V.—MISCELLANEOUS.

1. In no branch of instruction has there been a greater change of place and scope than in drawing. Twenty-five years ago the number of public schools in which drawing was systematically taught was very small. Now the schools in which it is not taught are as rare to find as were the schools formerly where it was taught. At first the cultivation of the aesthetic sense was considered the only end to be sought, and it was in some way thought to be reached through drawing endless castles and rustic mills from flat copies. Later, the dominant purpose seemed to be to make the subject as practical as possible. This was carried out by the introduction of mechanical drawing, which had little relation to practical mechanics, and which was generally a laborious and tedious process to all concerned. Gradually these two ideas of the purpose of drawing as a branch of study have been supplemented by a third, which is that drawing is educational, and serves to train all the powers of the mind. As such the subject has its strongest claim for a place in the program. With this later idea of the function of drawing have come improved methods of teaching the subject, which serve to accomplish in good ways the ends that were formerly sought,—of aesthetics, by leading the pupils to draw and to use colors in imitation of nature and to appreciate by observation and study the most beautiful works of art; and of practicalness, by drawing free-hand from objects and by connecting closely the mechanical part of the subject with the work of manual training and with the every-day uses of life.

The growth of manual training as a branch of study in the schools has been somewhat like that of drawing. At first it was sought as an accomplishment, afterwards as a trade, now

as a means of mental discipline in furnishing a good foundation for practical life. Its claims to a place in the course of studies are: that (1) it teaches dexterity of hand; (2) it trains to habits of order and neatness; (3) it cultivates a sense of truth and right by demanding exactness of details; (4) it cultivates the will in its requirements of persistence until an object is completed; (5) it serves as a valuable aid to drawing and art studies; (6) it cultivates the ethical sense in enabling pupils to make useful objects; (7) it serves to offset the strain of intellectual work; and (8) it gives respect for manual labor.

The reasons for making singing a regular and systematic subject of instruction are that it affords rest and recreation, is a means of healthy exercise and cultivates the æsthetic, ethical and religious sense. Governed by these ends, the aim and scope of singing as a subject of instruction are clearly (1) to train the ear so as to appreciate and enjoy good music that is felt and (2) to understand and be able to sing at sight any ordinary secular or sacred piece of music.

2. The relation of drawing to manual training is so close that each may be said to be incomplete as a subject of instruction without the other. Both subjects also are closely connected with geometrical measurements. Drawing as a form of expression is closely related to every other subject of study,—to literature in illustrated sketches, to arithmetic in plans and working drawings, and to history and geography in diagrams and maps. In fact, it may be used as other forms of expression are used, and in some cases it may be used profitably when other means fail to express the thought or feeling.

In the lower grades the placing of singing in close relation to the reading and nature exercises and to the morning talk is made very effective. In the lower grades also singing in connection with some of the physical exercises is found beneficial. The use of singing tones has come to be recognized as a valuable means of securing good speaking tones, just as the phonic exercises in spoken tones have been found helpful in developing a good singing tone.

3. Skill in the subjects of this group, as in all technical subjects, will depend upon the fidelity with which the successive steps are taken. Nowhere is a close application of the maxims

“from the known to the related unknown” and “from the simple to the complex” more necessary than in connection with these subjects.

In the early stages of drawing as at present pursued there is a free expression of ideas through illustrative sketching without reference to principles. Attention is then given to form with special reference to correct proportion and outline, succeeded by exercises which give skill in rendering characteristic detail. Finally, there is sought to be secured a full and free expression of grace of form and harmony of color. In the mechanical side of drawing the successive steps are: first, exercises in precision, as paper folding and cutting; second, exercises in accurate measurement; third, accurate drawing of surfaces of given dimensions; fourth, conventional grouping of figures to express solidity; and, fifth, drawing to scale.

So far as the occupations of the kindergarten are educative, they are but the beginning of a series of manual exercises which should have no break throughout the elementary school course. In the earlier stages of the course, paper and cardboard should be extensively used, and always in close connection with drawing, for the purpose mainly of developing manual dexterity. In the later stages exercises to teach the use of tools should be given, and applications of what has been learned should be made in the manufacture of useful objects. In the last two years the course may, if thought desirable, be divided into two departments,—one for wood working and the other for sewing.

In singing, care should be observed that the steps of technique be taken in a natural order, and that the demands upon the children keep pace with their vocal powers and musical appreciation.

4. Within the scope and time already laid down, there need be given no limitations in drawing and manual training beyond what is necessary under a class system of instruction. Here, as in other branches, the minimum of what is expected to be done may be prescribed, together with extra or extended work to suit the circumstances.

Limitations in singing should be made in two directions: first, in respect to the time of learning the language of music; and, second, in respect to reach of tones. The child needs to

acquire a musical sense, — that is, a love for and appreciation of music, — before the language of music is learned. For this reason two or three years of careful practice in simple phonic exercises and rote songs should be spent before sign reading is begun. Such exercises are also needed for a proper development of strength and sweetness of tone. The danger of over-straining young children's voices is avoided by confining the exercises during the first year to the lower tones.

#### A FOREIGN LANGUAGE.

It will be observed that no reference has been made to a foreign language in the preceding discussion, although that subject was recommended in previous reports.\* In my second report I referred to the desirability of making it a part of the elementary course, but of offering it as an elective, "either by making it an extra study or by permitting it to be taken in place of some part of the work in English grammar." If it is taken as a separate and extra study, of course only those pupils should take it who have time and strength for it in addition to the required work of the school. If the new language is begun in the fifth or sixth year of the course, and if but two recitations a week are given to the study, little extra time need be given to it to acquire a fair degree of facility in reading and some knowledge of the grammar of the language.

The question of what foreign language shall be selected for study in the elementary schools has been discussed by educational leaders. No agreement has been reached, and perhaps none should be expected or desired. The preponderance of practice seems to be in favor of Latin. The arguments in favor of Latin are: (1) the desirability of giving pupils who do not go to the high school an opportunity of acquiring some knowledge of a language from which a large percentage of English words are derived; (2) the advantage of a good start in the study before the high school is reached, so that the increased requirements for entrance to college may be met easily in four years; and (3) the comparative ease of getting good teachers of the subject.

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\* See Preliminary Report, p. 45, and Second Report, p. 15.

Weighty as the above reasons are for choosing Latin as the foreign language to be offered in the grammar school, they seem to be outweighed by considerations in favor of a modern language, French or German. In the first place, in making the choice there should be primarily regarded the interests of those pupils who are not to continue their studies beyond the grammar school, on account of their limited means of culture. For such pupils a slight knowledge of French or German would be quite as disciplinary as Latin, and far more useful. In four years, with the limited time indicated, — two lessons a week, — a pupil should be able to read easy French or German at sight, and to talk somewhat in the language studied, — acquisitions which would be much more useful in a living than in a dead language. Again, if French is selected, the comparative ease of acquisition should be considered, not merely for the acquisition itself, but for the use that may be made of it in learning Latin. Many teachers advise the study of French two years before Latin is begun, for the help which it gives in the latter study. If French or German is taken as an optional study, there should be no more than two lessons a week, involving comparatively little of outside study. Easy reading should be put into the hands of the pupils after a few weeks of oral lessons. Attention should be confined to reading and talking during the first two years, or grades five and six. During the last two years these exercises should be supplemented by simple grammar lessons and writing, all pointing to the practical ends of correctness and facility in reading and talking.

#### SUB-PRIMARY CLASS.

Before giving an outline of prescribed work for the sub-primary class, I desire to give the reasons for recommending the formation of such a class, and to explain more fully than I have done the character of the exercises proposed for it.

In the first report of this series the following statements are made with reference to the need of a special class for children under six years of age: —

It is possible that the differences in this country in the earliest age of admission to the elementary schools and in the length of the course of such schools will disappear when the kindergarten becomes uni-

versally a part of the public school system. It may be fairly questioned, however, in any event, whether much of the formal intellectual work now carried on in many first-year primary classes should be demanded of children before the age of six. If, where children are permitted to enter school at five, a sub-primary course could be pursued, consisting largely of manual and observational work, advancement in subsequent work required would be likely to be quite as rapid as it is at present, where pupils are required to read and write much during the first year. In case there is a kindergarten course which children can begin at three or four years of age, the work of this sub-primary class could be supplementary to the work of the kindergarten and preparatory for the more formal work of the primary school. According to many of our best kindergartners and primary school teachers, this connection between the two schools is very much to be desired.\*

Again, in a later part of the same report I said:—

In many schools where children are permitted to enter at five, as much is attempted and frequently as much is done in reading, writing and number as is done in schools whose minimum age of admission is six years. That this gain is only an apparent one is obvious to all who are able to compare results at the end of the course. The plan that I would recommend is, that in all places where children are permitted to enter school at five years of age, sub-primary classes be established, whose work shall consist largely of an extension or modification of the manual and observational work of the kindergarten, supplemented by some of the nature work and drawing now pursued in our best primary schools, and by a little reading, writing and number work.

If sub-primary classes are formed for children under six years of age, the nine years' course for children who enter school at five will be reduced to an eight years' primary and grammar school course, thus agreeing in age of admission, grades and age of graduation with our present eight years' course for children who are admitted at six years of age.†

In view of all that has been said by experienced teachers regarding the advisability of supplementing the work of the kindergarten by less formal work than is usually required in a primary school, it would seem unnecessary to plead for the introduction of the proposed class. Every primary school

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\* Preliminary Report, p. 6.

† Preliminary Report, p. 38.

teacher realizes that the change is very great from the comparatively unrestrained freedom of the kindergarten, with its dozen or fifteen children, to the school where restrictions are made necessary by the large number of children and by the character of the work required. "Connecting classes" between the kindergarten and the primary school have been formed in several places, and they have invariably been found to be of great use in wisely leading the children into good school habits. Frequently the class exercises have been such as to permit pupils to omit a portion of the first-grade primary work.

But, if the sub-primary class is needed for those children who have had the benefits of the kindergarten, much more is such a class needed for children who have not had the advantage of the better training. The change from the home to the school is even greater than that from the kindergarten to the school, and therefore needs the bridge that the proposed class offers. Most people can recall the ordeal through which they passed during the first few weeks of school life. Perhaps the modern school has made the ordeal less trying than it used to be; but we can scarcely realize how great, under the best conditions, the gap is between the freedom of the home and the constraints of the schoolroom, where forty or fifty children have to be controlled by a single teacher.

To those parents who believe in the usefulness of the kindergarten and have not the opportunity to send their children to one, the proposition to establish sub-primary classes ought to be very welcome; for certainly more of the spirit of the kindergarten can be infused where there is large opportunity given for the gifts, occupations and games than in the ordinary primary school, where so much formal work is required. In places where the kindergarten is forbidden through ignorance of its benefits, or where it does not exist through lack of means, the establishment of the proposed grade will not be difficult to bring about. Indeed, in places where the age of admission is five years, it lies wholly in the hands of the school authorities to carry the plan into effect, inasmuch as it would simply take the place of the first-grade primary.

There is another, and, I believe even stronger, argument for the formation of the proposed class; and that is, the claim that

too much formal and too little observational work is now done in the first year of school. Children five years of age can no doubt do a prodigious amount of formal work. They *can* read through a dozen first readers, write a good hand, go to a hundred or a thousand in numbers, and perhaps read music in three keys,—all during the first year. But the question is, Ought they to do it? Ought they to do half or quarter as much? A fair answer to this question will, I am sure, lead us to revise the primary course, as now generally pursued, in the direction of the plan proposed.

The course to be pursued in the sub-primary class will depend somewhat upon the previous training of the children; but in any case the program will consist of an extension of the work of the kindergarten, especially along observational and manual training lines, with a comparatively small amount of reading, writing and arithmetic. The following general outline may suggest the character of the exercises most desired for the proposed class. The grouping and limitations of time are those given in the time program on a previous page of this report.

*Groups I. and IV.*—(Time spent daily in recitation and busy work for a single group of pupils, about 90 minutes.) Story telling,—selections from kindergarten stories, myths and fairy tales. Reading of words in sentences on blackboard and chart and on picture slips. Reading sentences from blackboard and chart. Phonic drill. Some analysis and synthesis by sounds. Writing on tracing slips, blackboard and paper. Large movements.

*Group II.*—(Time spent daily, about 15 minutes.) Fourth and fifth kindergarten gifts for counting and combining.

*Group III.*—(Time spent daily, about 45 minutes.) Recognition of common plants and trees, and their principal parts. Observation of and talks about familiar domestic animals and birds. Some resemblances and differences noted. Adaptation of parts to uses observed.

*Group V.*,—including physical exercises, singing, games, drawing and hand work. (Time spent daily, about 90 minutes.) Construction and design, with tablets, sticks and blocks. Moulding in clay. Painting in color with brush. Paper fold-

ing and parquetry. Free illustrative sketching from memory and imagination. For physical exercises and singing, make selections from kindergarten songs and games.

#### OUTLINE OF A COURSE OF STUDIES FOR PRIMARY AND GRAMMAR SCHOOLS.

The following outline suggests a possible adjustment of primary and grammar school work to the conditions indicated in this and in previous reports. While it is probably insufficient to meet fully the needs of any system of schools, it is hoped that it will fulfil in some degree the requirements of a general course, upon which more detailed courses may be constructed suited to various localities and conditions. The absence of repeated directions to review previous work and to follow proper lines of teaching indicates the presumption of professional ability on the part of teachers. A course of studies is not a manual of methods and theories of teaching, however important such a statement of methods and theories may be in some places. Happy is it for those schools whose courses of studies may presuppose the employment of teachers whose knowledge of the principles of teaching is undoubted, and whose judgment is fully trusted in the selection of materials within the bounds of an outline not greatly extended.

It should be understood that this course is intended for pupils who enter school at six years of age, and who come either from the kindergarten or sub-primary class. Some pupils who have taken the course outlined for the sub-primary class may be able to take the work outlined for the first grade in less than a year.

The figures in the left-hand column indicate the year and quarter during which the work in parallel columns is supposed to be done. For example, 2<sup>3</sup> means the third quarter of the second year. The figures in decimals above each year's outline of work denote the approximate percentage of recitation time which a pupil or a group of pupils should give to the allotted group of subjects. These figures are taken from Table XV of the Second Report.

Grade and Quarter.	Group I. (.42)	Group II. (.12)	Group III. (.12)	Group IV. (.10)	Group V. (.24)
	(a) Reading. (b) Writing. (c) Composition and Spelling. (d) Memory Work. (e) Grammar.	(a) Arithmetic. (b) Form and Geometrical Exercises. (c) Algebra. (d) Book-keeping.	(a) Nature Study and Elementary Science. (b) Geography. (c) Physiology and Hygiene. (d) Information Reading connected with the Lessons of this Group.	(a) History and Biography. (b) Civil Government.	(a) Drawing and Art. (b) Manual Training. (c) Singing.
1 <sup>1</sup>	(a) Words in sentences from blackboard. (b) Copying words from blackboard and slips. (c) Telling of stories told by teacher. (d) Learning and reciting of short pieces—a minimum average of two lines a day.	(a) Combinations of numbers to ten, using blocks. All oral work. Original stories. Use terms one half and one fourth. (b) Comparison of blocks in size.	(a) Recognition of common plants and trees. Teach principal parts. Uses of plants and their parts to man. (b) Parts of body,—move, ment, use and care of each part. (c) Suitable stories and selections (see list). (d) Suitable stories and selections (see list).	(a) Telling of carefully selected fairy stories, suitable to the capacity of the children and to the season. Select also with reference to what is done in nature study and reading (see list of books and selections). (b) Paper folding.	(a) Free illustrative sketching from memory and imagination. The solar spectrum for color. (b) Paper folding. (c) Breathing and phonic exercises. Rote songs.
1 <sup>2</sup>	(a) Sentences from chart or reader. Analysis and synthesis of words by sound. (b) Copying words and sentences from blackboard and slips. Copying single letters. (c) Oral reproduction of stories told or read. Copying words and sentences. (d) Learning and reciting of short pieces.	(a) Combinations of numbers to ten with and without objects. Use of figures in examples. Teach pint, quart. Original stories. (b) Area of surface of inch cube. Length of edges.	(a) Observe flesh-eating animals (dog, cat) for habits and adaptation of parts to habits; pictures of unfamiliar animals for comparison. (b) Uses of animals and their parts to man. Animal productions. (c) Compare parts of body with bodies of animals studied. Compare uses. (d) Suitable selections (see list).	(a) Stories prescribed for first quarter continued. (b) Paper folding for accuracy. (c) Breathing and phonic exercises continued. Dictation and memory exercises. Tone building on music ladder (not above fifth tone). Rote songs.	(a) Study of pictures for story. The six spectrum colors. (b) Paper folding for accuracy. (c) Breathing and phonic exercises continued. Dictation and memory exercises. Tone building on music ladder (not above fifth tone). Rote songs.

<p><b>1<sup>3</sup></b></p> <p>(a) Sentences from first part of two or more first readers. Analysis and synthesis of words continued.</p> <p>(b) Copying words and sentences continued. Correct forms of single letters taught.</p> <p>(c) Oral reproduction of stories told or read.</p> <p>(d) Learning and reciting of short pieces. Review last half year's work frequently.</p>	<p>(a) Combinations of numbers to twenty with objects. Teach dozen, quart, gallon, pint, gill, dime, foot, inch. Fractional parts of numbers. Examples and problems. Original problems.</p> <p>(b) Comparison of surfaces of inch cube and other surfaces.</p>	<p>(a) Recognition of common rocks. Birds observed. Uses of rocks to man. Mineral productions.</p> <p>(b) Review and continue previous lessons. Parts of head. Care of teeth, hair, ears, eyes, face.</p> <p>(c) Suitable selections (see list).</p>	<p>(a) Stories prescribed for first quarter continued.</p> <p>(b) Drawing lines with ruler from point to point.</p> <p>(c) As in second quarter.</p>
<p>(a) Reading easier pieces of four or more first readers. Analysis and synthesis of words by sound and by letter.</p> <p>(b) Copying sentences from models and writing from dictation. Writing of single letters continued.</p> <p>(c) Copying sentences continued. Dictation of short sentences. Teach pupils to write their name; school; town; father's (Mr.) name; mother's (Mrs.) name; teacher's name. Period and question mark.</p> <p>(d) Learning and reciting of short pieces.</p>	<p>(a) Same as last quarter with and without objects. Review and apply weights and measurements in practical problems.</p> <p>(b) Comparison of length of edges of inch cube with edges of other blocks.</p>	<p>(a) Recognition of common plants and trees. Observe and name qualities as color, size, form, number, surface.</p> <p>(b) Uses of plants and trees and their parts. Vegetable productions.</p> <p>(c) Parts of hands and feet. Uses. Care of nails.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) Stories prescribed for first quarter continued.</p> <p>(b) Cutting to a line with scissors.</p> <p>(c) As in second quarter.</p>
			<p><b>1<sup>4</sup></b></p> <p>Oral and written reproduction of what has been read or told.</p>

	Group I. (.42)	Group II. (.12)	Group III. (.12)	Group IV. (.10)	Group V. (.24)
2	<p>(a) Selections from several first readers. Analysis and synthesis of words continued.</p> <p>(b) Copying and writing from dictation continued. Teach correct forms of single letters.</p> <p>(c) Oral and written compositions (reproductions, etc.), daily. Common abbreviations. Use of period and interrogational mark. Use of capital at beginning of sentence. Dictation daily for spelling, etc.</p> <p>(d) Memory work reviewed and continued (see list).</p>	<p>(a) Numbers from one to one hundred:—</p> <ol style="list-style-type: none"> <li>Combinations of tens and of tens with numbers less than ten.</li> <li>All combinations to thirty; no added or subtracted number or multiplier or divisor greater than ten.</li> <li>Application to familiar weights and measures.</li> <li>Fractional parts of numbers.</li> <li>Original problems.</li> <li>Areas of inch cube and of two-inch cube.</li> </ol>	<p>(a) Extend observations of first grade in recognizing common plants and trees.</p> <p>(b) Useful vegetable productions. Location of plants observed. Position and direction (general).</p> <p>(c) The skin,—use, care and cleanliness. Use of the senses.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) Telling and reading of fairy stories and fables. Select with reference to capacity of children, to the season and to what is done in nature study and reading (see list of books and selections).</p> <p>(c) As in first year.</p>	<p>(a) Illustrative drawing. Memory and imagination, with help of live objects (birds and animals). Six standard colors.</p> <p>(b) Paper folding and cutting.</p> <p>(c) As in first year.</p>
2 <sup>2</sup>	<p>(a) Difficult portions of several first readers. Phonics drill.</p> <p>(b) Copying and writing from dictation continued. Practice upon forms of single letters if needed.</p> <p>(c) Oral and written compositions continued. Common abbreviations such as used in arithmetic. Dictation for correct forms of words, spelling, etc.</p> <p>(d) Memory work reviewed and continued (see list).</p>	<p>(a) Numbers from one to one hundred:—</p> <ol style="list-style-type: none"> <li>Combinations of tens and of tens with smaller numbers.</li> <li>All combinations to fifty; no added or subtracted number or multiplier or divisor greater than ten.</li> <li>Application to familiar weights and measures.</li> <li>Fractional parts of numbers.</li> <li>Original problems.</li> <li>Perimeters of inch cube and of two inch cube.</li> </ol>	<p>(a) Observe grass-eating animals (cow, horse, sheep) for habits and adaptation of parts to habits. Use pictures of unfamiliar animals of same class for comparison.</p> <p>(b) Useful animal productions. Position, direction, distance. Familiar bodies of land and water.</p> <p>(c) Use of the bones of the body. How injured. Effect of tobacco and alcohol.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) Stories prescribed for first quarter continued.</p> <p>(b) Paper folding and cutting.</p> <p>(c) As in first year.</p>	<p>(a) Study of pictures for story. Use of water colors.</p> <p>(b) Paper folding and cutting.</p> <p>(c) As in first year.</p>

<p><b>23</b></p> <p>(a) Easy portions of several second readers. Daily phonic drill. Easy selections (see list).</p> <p>(b) Copying and writing from dictation with pen and ink. Practice upon single letters if needed.</p> <p>(c) Daily composition and dictation exercises. Teach use of capitals. Review in sentences common difficult words.</p> <p>(d) Memory work reviewed and continued (see list).</p>	<p>(a) Numbers from one to one hundred:— (1) All combinations; no added or subtracted number or multiplier or divisor greater than ten.</p> <p>(2) Application to familiar weights and measures.</p> <p>(3) Fractional parts of numbers.</p> <p>(4) Original problems.</p> <p>(b) Comparison in size of prisms each of whose bases is one inch square.</p> <p>(c) Simple lessons on eating, drinking, breathing and sleeping. Healthful foods and drinks.</p> <p>(d) Suitable selections (see list).</p> <p>(a) History of plant life from seed to seed. Observe bean and pea. Plant several kinds of seed for observation and comparison.</p> <p>(b) Plants and parts used for food and clothing. Use of seeds to man. Forms of water. Winds, direction and distance.</p> <p>(c) As in first year.</p> <p>(d) Ruling lines of definite lengths and divisions.</p>
<p><b>24</b></p>	<p>(a) Stories prescribed for first quarter continued.</p> <p>(b) Drawing from nature simple grasses and flowers, using water colors.</p> <p>(c) Cutting to a line with scissors.</p> <p>(d) As in first year.</p> <p>(a) Stories prescribed for first quarter continued.</p> <p>(b) Drawing from nature simple grasses and flowers, using water colors.</p> <p>(c) Cutting to a line with scissors.</p> <p>(d) As in first year.</p> <p>(a) Stories prescribed for first quarter continued.</p> <p>(b) Drawing from nature common plants and trees of neighborhood and cultivated plants.</p> <p>(c) Direction and distance applied to familiar bodies of land and water. Productions—animal and vegetable —of the town.</p> <p>(d) Suitable selections (see list).</p> <p>(a) Extend observation in recognizing and naming common plants and trees of neighborhood and cultivated plants.</p> <p>(b) Application to familiar weights and measures.</p> <p>(c) Original problems.</p> <p>(d) Comparison of surfaces of prisms.</p> <p>(a) Several second readers and selections (see list). Daily phonic drill.</p> <p>(b) Copying and writing from dictation containing forms of single letters if needed.</p> <p>(c) Daily composition and dictation exercises. Ordinary use of capitals, common abbreviations, use of period, interrogation and exclamation marks. Spelling of common words.</p> <p>(d) Memory work reviewed and continued (see list).</p>

	Group I. (38)	Group II. (15)	Group III. (16)	Group IV. (10)	Group V. (.22)
31	<p>(a) Difficult portions of several second readers and other books of corresponding grade (see list).</p> <p>(b) Copying and writing from dictation continued.</p> <p>(c) Daily composition and dictation exercises. Attention given to abbreviations, spelling, punctuation and use of capitals. Also to correct words and correct forms of words.</p> <p>(d) Memory work reviewed and continued (see list).</p>	<p>(a) Numbers to one thousand. (1) Addition and subtraction with and without objects.</p> <p>(2) Continue applications to familiar weights and measures and use of fractional parts of numbers.</p> <p>(3) Original problems.</p> <p>(b) Comparison of surfaces of cubes and prisms with surface of inch cube.</p>	<p>(a) Extend observation in recognizing and naming common plants and trees grouping according to habitat.</p> <p>(b) Cardinal and semi-cardinal points. Distance continued. Details of hills, plains, valleys.</p> <p>(c) Flesh making and heat giving foods. Salty foods. Wholesome and unwholesome drinks.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) (1) Classical myths and stories (see list). (2) Stories of ancient world, Egypt, Assyria, Baby-lonia, Judea. Bible stories (see list of books and selections).</p>	<p>(a) Free drawing of plants and other common objects. Hues of color by means of colored papers.</p> <p>(b) Paper folding and cutting.</p> <p>(c) Breathing, phonetic, dictation and memory exercises continued. Tone building on musical ladder. All tones of scale. Rote songs.</p>
32	<p>(a) Books and selections of corresponding grade to third reader (see list).</p> <p>(b) Copying and writing from dictation continued.</p> <p>(c) Daily composition and dictation exercises giving attention to spelling, punctuation, use of capitals, correct words and correct forms of words.</p> <p>(d) Memory work reviewed and continued (see list).</p>	<p>(a) Numbers to one thousand. (1) Multiplication and division with and without objects.</p> <p>(2) Continue applications to familiar weights and measures and fractional parts of numbers.</p> <p>(3) Original problems.</p> <p>(b) Comparison of perimeter of known surfaces with perimeter of square inch.</p>	<p>(a) Local minerals and rocks for recognition and properties in color, form, hardness. Qualities of air and water.</p> <p>(b) Plans read showing directions and distances of familiar objects. Details of brooks and ponds. Weather record.</p> <p>(c) Simple lessons on digestion and circulation of blood. Effects of tobacco and alcohol.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) Stories prescribed for first quarter continued.</p> <p>(b) Paper folding and cutting.</p> <p>(c) As in first quarter.</p>	<p>(a) Study of pictures for story. Hues of color in washes.</p>

<p>(a) Books and selections of corresponding grade to third reader (see list).</p> <p>(b) Copying and writing from dictation.</p> <p>(c) Daily composition and dictation exercises. Attention given to spelling, punctuation, use of capitals, choice of words and forms of words; also to clearness and originality.</p> <p>(d) Memory work reviewed and continued.</p>	<p>(a) Numbers to one thousand. (1) All operations. (2) Applications in common weights and measures. (3) Original problems.</p> <p>(b) Measurements of short and familiar distances and practical applications.</p> <p>(c) Drawing of plants to scale. Erosive action of water. Soil formation. Land and water surface of neighborhood. Weather record.</p> <p>(d) Simple lessons concern- ing respiration and ventilation. The skin, — sweat tubes and bath-</p> <p>(e) Suitable selections (see list).</p> <p>(a) Stories prescribed for first quarter continued.</p> <p>(b) Drawing and cutting figures of definite dimensions.</p> <p>(c) As in first quarter.</p> <p>(d) Illustrative drawing. Drawing of animals in ink, silhouette, or color. Harmonious arrangement of one color with black, white or gray.</p> <p>(e) Drawing and cutting figures of definite dimensions.</p> <p>(f) Drawing of grasses, leaves and flowers from nature in color. Use of floral elements in borders or surface patterns in color.</p> <p>(g) Cutting units of design.</p> <p>(h) As in first quarter.</p> <p>(i) Drawing of grasses, leaves and flowers from nature in color. Use of floral elements in borders or surface patterns in color.</p> <p>(j) Cutting units of design.</p> <p>(k) As in first quarter.</p> <p>(l) Drawing of grasses, leaves and flowers from nature in color. Use of floral elements in borders or surface patterns in color.</p> <p>(m) Cutting units of design.</p> <p>(n) As in first quarter.</p> <p>(o) Drawing of surfaces, soil, climate and productions of town. Plan of neighborhood drawn to scale. Map of town.</p> <p>(p) Care of teeth, eyes, throat, ears, hair, finger nails. Simple lessons on eating, sleeping, exercising, etc.</p> <p>(q) Suitable selections (see list).</p>
<p>(a) Books and selections of corresponding grade to third reader (see list).</p> <p>(b) Copying and writing from dictation.</p> <p>(c) Daily composition and dictation exercises. Attention given to correctness of spelling, punctuation, use of capitals, choice of words and forms of words; also to clearness and originality.</p> <p>(d) Memory work reviewed and continued.</p>	<p>(a) Numbers to one thousand. (1) All operations. (2) Applications in common weights and measures. (3) Original problems.</p> <p>(b) Measurements of familiar surfaces and practical applications.</p> <p>(c) Surface, soil, climate and productions of town. Plan of neighborhood drawn to scale. Map of town.</p> <p>(d) Care of teeth, eyes, throat, ears, hair, finger nails. Simple lessons on eating, sleeping, exercising, etc.</p>

	Group I. (.32)	Group II. (.16)	Group III. (.20)	Group IV. (.12)	Group V. (.20)
4 <sup>1</sup>	<p>(a) Literature suited to the interest and capacity of pupils (see list).</p> <p>(b) Instruction to pupils who do not form letters well.</p> <p>(c) Daily composition and dictation exercises giving attention to correctness of spelling, punctuation, use of capitals, choice and forms of words, — also to clearness, conciseness and comprehensiveness of expression.</p> <p>(d) Memory work reviewed and continued (see list).</p>	<p>(a) (1) Integers to one million. Addition and subtraction.</p> <p>(2) Fractions: halves, fourths and eighths.</p> <p>(3) Simple business transactions.</p> <p>(4) Common weights and measures.</p> <p>(b) Angles and areas of rectangles</p>	<p>(a) Plant and its parts: parts of leaves and flowers; change of flower to fruit and seed.</p> <p>(b) Lessons on natural divisions of land and water. Map reading of County and State.</p> <p>(c) The bones as a frame; work and protection; number, names and location.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) (1) Stories from the Iliad.</p> <p>(2) Reading of stories connected with pioneer life, especially of the part of country in which the children live.</p>	<p>(a) Freehand drawing in any appropriate medium of plants, fruits and other objects (spherical). Analysis of leaves and flowers for color schemes.</p> <p>(b) Accurate drawings with ruler involving <math>\frac{1}{8}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, and cutting in cardboard.</p> <p>(c) Breathing, phonic dictation, and memory exercises continued. Staff notation, — study of notes, rests, etc., and accent. Note songs.</p>
4 <sup>2</sup>	<p>(a) Literature suited to the interest and capacity of pupils (see list).</p> <p>(b) Instruction to pupils who need it.</p> <p>(c) As in first quarter.</p>	<p>(a) (1) Integers to one million. Multiplication and division.</p> <p>(2) Fractions: thirds, sixths, twelfths.</p> <p>(3) Simple business transactions.</p> <p>(4) Common weights and measures.</p> <p>(b) Areas of parallelograms.</p>	<p>(a) Animals: recognition, habits and adaptation of parts. Cycle of animal life as shown in frog; grouping of known animals.</p> <p>(b) Teach with globe general features of land and water surface; also general facts of climate, productions, people, countries, cities.</p> <p>(c) Composition and structure of the bones.</p>	<p>(a) (1) Stories from the Odyssey.</p> <p>(2) Stories connected with famous persons, Marco Polo, Columbus, Magellan, Balboa, Drake, La Salle, De Soto, Raleigh.</p>	<p>(a) Study of famous painting for centre of interest and emphasis. Tints and shades in water color.</p> <p>(b) Simple constructive design, — card picture frames and the like, of good proportions.</p> <p>(c) As in first quarter.</p>

<p>(a) As in first quarter.</p> <p>(b) As in first quarter.</p> <p>(c) As in first quarter.</p> <p>(d) As in first quarter.</p>	<p>(a) (1) Integers unlimited.</p> <p>(2) Fractions to twelfths, decimals, tenths and hundredths.</p> <p>(3) Simple business transactions.</p> <p>(4) Common weights and measures.</p> <p>(b) Areas of triangles.</p>	<p>(a) Teach pebbles, sand and clay with reference to life history of rocks. Observe crystals and show how they may be found. Effect of heat on water and air.</p> <p>(b) North America by topics. Special lessons on climate.</p> <p>(c) Joints, ligaments and cartilages.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) (1) Stories connected with early local history.</p> <p>(2) Stories of famous persons, John Smith, Henry Hudson, Surveyor, Myles Standish, Massasoit, Roger Williams, Governor Bradford, King Philip.</p> <p>(b) Accurate subdivisions of fields for design.</p> <p>(c) As in first quarter.</p>	<p>(a) (1) Stories connected with early local history.</p> <p>(2) Stories of famous persons, John Smith, Henry Hudson, Surveyor, Myles Standish, Massasoit, Roger Williams, Governor Bradford, King Philip.</p> <p>(b) Accurate subdivisions of fields for design.</p> <p>(c) As in first quarter.</p>
<p>(a) As in first quarter.</p> <p>(b) As in first quarter.</p> <p>(c) As in first quarter.</p> <p>(d) As in first quarter.</p>	<p>(a) (1) Integers unlimited.</p> <p>(2) Common fractions to twelfths, decimal fractions to thousandths.</p> <p>(3) Applications in simple business transactions and in common weights and measures.</p>	<p>(a) Recognition of plants continued. Changes in nature and their relation to plants, animals and man. Movement and changes in moon. Observe star groups.</p> <p>(b) United States as a whole and in sections, by topics. Teach by topics. State and town.</p>	<p>(a) (1) Stories connected with early local history.</p> <p>(2) Stories of famous persons, Franklin, Washington, Lafayette, Fulton, Morse, Lincoln, Grant.</p>	<p>(a) Drawings in any appropriate medium of leaves and flowers from nature. Arrangement in spaces. Application in border and surface patterns in color.</p> <p>(b) Cutting of geometric forms in thin wood.</p> <p>(c) As in first quarter. Two part exercises and songs.</p>
<p>4<sup>3</sup></p>	<p>(a) (1) Integers unlimited.</p> <p>(2) Common fractions to twelfths, decimal fractions to thousandths.</p> <p>(3) Applications in simple business transactions and in common weights and measures.</p> <p>(b) Practical applications in finding areas.</p>	<p>(a) Growth and health of the bones. Effects of exercise, rest, posture, clothing, food and alcoholic stimulants.</p> <p>(b) Suitable selections (see list).</p>	<p>(a) (1) Stories connected with early local history.</p> <p>(2) Stories of famous persons, Franklin, Washington, Lafayette, Fulton, Morse, Lincoln, Grant.</p>	<p>(a) Drawings in any appropriate medium of leaves and flowers from nature. Arrangement in spaces. Application in border and surface patterns in color.</p> <p>(b) Cutting of geometric forms in thin wood.</p> <p>(c) As in first quarter. Two part exercises and songs.</p>

	Group I. (.32)	Group II. (.16)	Group III. (.20)	Group IV. (.12)	Group V. (.20)
5 <sup>1</sup>	<p>(a) As in fourth grade.</p> <p>(b) As in fourth grade.</p> <p>(c) As in fourth grade.</p> <p>(d) As in fourth grade.</p>	<p>(a) (1) Addition and subtraction of common fractions.</p> <p>(2) Applications with common weights and measures.</p> <p>(b) Kinds of polygons.</p>	<p>(a) Plants and parts continued, emphasizing roots and stems. Form, leaves and bark of trees; grouping of plants.</p> <p>(b) The countries of North America, other than the United States, by topics. Special lessons on mountain ranges and slopes.</p> <p>(c) The structure, kinds, action and uses of the muscles.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) (1) Consecutive reading relating to explorations and discoveries in North America.</p> <p>(2) Stories relating to Indian life in North America.</p>	<p>(a) Freehand drawing in any medium of plants, fruits and simple spherical and cylindrical objects. Analysis of leaves and flowers for color schemes.</p> <p>(b) Accurate drawings of polygons with compasses and ruler.</p> <p>(c) Previous work continued. Exercises in key of C, G and F.</p>
5 <sup>2</sup>	<p>(a) As in fourth grade.</p> <p>(b) As in fourth grade.</p> <p>(c) As in fourth grade.</p> <p>(d) As in fourth grade.</p>	<p>(a) (1) Multiplication and division of common fractions.</p> <p>(2) Applications with common weights and measures.</p> <p>(b) Areas of polygons.</p>	<p>(a) Study of rock forming minerals, quartz, mica, feldspar, etc. Building stones. Motion and pressure in solids, water and air.</p> <p>(b) Continent of South America by topics. Special lessons on drainage.</p> <p>(c) Development of the muscles. Effects of exercise, rest, narcotics and alcoholic stimulants.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) (1) Consecutive reading relating to explorations and discoveries in South America.</p> <p>(2) Stories connected with life of the Aztecs and Incas.</p>	<p>(a) Study of famous paintings for centre of interest and emphasis. Subordination accessories. Hues in water color.</p> <p>(b) Modifications of polygons for objects of beautiful line, silk reel, badge, etc. Construction in appropriate material.</p> <p>(c) As in first quarter.</p>

<p>(a) As in fourth grade.          (b) As in fourth grade.          (c) As in fourth grade.          (d) As in fourth grade.</p> <p><b>5<sup>3</sup></b></p>	<p>(a) (1) Decimal fractions: (i) all operations unlimited.          (2) Applications in business transactions.          (b) Areas of surfaces of cube and prism.</p> <p>(b) Continent of Europe topically. Special lesions on soil.</p> <p>(c) Structure of the skin, hair and nails; the respiratory and sebaceous glands.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) Minerals continued: Continue study of changes in heat on water and air. Apply to phenomena of seasons. Changes in position of sun.</p> <p>(a) (1) Consecutive reading of history relating to the early colonies of North America.          (2) Stories connected with the early history of continental Europe.</p> <p>(b) Accurate subdivision of fields of designs into polygons.</p> <p>(c) As in first quarter.</p> <p>(a) Drawings in mass of animals and children in interesting attitudes. Illustrative drawings in other studies. Study of analogous coloring; related hues in design.</p> <p>(a) (1) Consecutive reading of history relating to the Indian wars in North America.          (2) Stories connected with the early history of England.</p> <p>(a) Drawings of plants and insects from nature in any appropriate medium. Arrangement in spaces, applications in borders, surface patterns and rosettes in color.</p> <p>(b) Development of surface of pyramids in cardboard. Applications in thin wood.</p> <p>(c) As in first quarter.</p> <p>(a) Insects: study of one for type of insect life, — grasshopper or butterfly; adaptation of parts to habits; metamorphosis. Relation of known insects to man as useful or injurious.</p> <p>(a) (1) Consecutive reading of history relating to the Indian wars in North America.          (2) Stories connected with the early history of England.</p> <p>(b) British Isles and dependencies. Special lessons on climate and productions.</p> <p>(c) Functions of the skin and their relation to the health of the body. Effects of bathing and clothing; stimulants and narcotics.</p> <p>(d) Suitable selections (see list).</p>

	Group I. (.32)	Group II. (.16)	Group III. (.20)	Group IV. (.12)	Group V. (.20)
6 <sup>1</sup>	<p>(a) As in fourth grade.</p> <p>(c) As in fourth grade.</p> <p>(d) As in fourth grade.</p>	<p>(a) (1) Metric system of weights and measures.</p> <p>(2) Percentage and simple applications.</p> <p>(b) Solid contents of cube and of square prism.</p>	<p>(a) Study of trees continued. Fruit and dispersion of seeds. Grouping of plants continued.</p> <p>(b) Review United States. Teach Russia, Germany and France, by topics. Special lessons on motions of the earth and their effects.</p> <p>(c) The bones, muscles and skin,—structure and function.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) (1) Consecutive reading of history relating to the Revolutionary war and events which led to it.</p> <p>(2) Stories connected with the history of Russia, Germany and France.</p>	<p>(a) Drawing in any medium of plants and common objects. Analysis of leaves and flowers for color schemes.</p> <p>(b) Working drawings of simple rectangular objects.</p> <p>(c) Previous exercises continued. Work in chromatic intervals. Exercises in key of D and B flat.</p>
6 <sup>2</sup>	<p>(a) As in fourth grade.</p> <p>(c) As in fourth grade.</p> <p>(d) As in fourth grade.</p>	<p>(a) (1) Practical problems in metric system and denominative numbers.</p> <p>(2) Simple applications of percentage.</p> <p>(b) Solid contents of rectangular prism.</p>	<p>(a) Study of common metals and their ores,—iron, copper, etc. Grouping of birds as to habits,—perchers, scratchers, swimmers.</p> <p>(b) Review state, county and town. Teach countries of Europe not before taught. Special lessons on latitude and longitude.</p>	<p>(a) (1) Consecutive reading of United States history relating to the period between 1783-1815.</p> <p>(2) Stories connected with the history of Spain, Greece and Italy.</p>	<p>(a) Study of famous paintings for centre of interest and emphasis, grouping of accessories for leading lines.</p> <p>(b) Design and manufacture of simple objects in paper, card or wood; pin box, candy box, etc.</p> <p>(c) As in first quarter.</p> <p>(d) Suitable selections (see list).</p>

<p>(a) As in fourth grade.      (c) As in fourth grade.      (d) As in fourth grade.</p> <p><b>6<sup>3</sup></b></p> <p>(a) (1) Practical problems in metric system and denominative numbers.      (2) Simple applications of percentage.      (b) Measurements of circle.</p> <p>(a) Study the combined effects of heat and gravity on water and air. Grouping of birds continued. Compare parts with corresponding parts of vertebrates.      (b) Continent of Asia, Japan, China, Philippine Islands. Special lesions on winds and ocean currents.      (c) The composition and uses of the blood. The organs of circulation and their functions.      (d) Suitable selections (see list).</p>	<p>(a) (1) Consecutive reading of United States history during the period from 1815 to 1860.      (2) Stories connected with Japanese, Chinese and Philippine islands.</p> <p>(a) (1) Study the combined effects of heat and gravity on water and air. Grouping of birds continued. Compare parts with corresponding parts of vertebrates.      (b) Continent of Asia, Japan, China, Philippine Islands. Special lesions on winds and ocean currents.      (c) The composition and uses of the blood. The organs of circulation and their functions.      (d) Suitable selections (see list).</p>	<p>(a) (1) Consecutive reading of United States history during and since the Civil War.      (2) Stories connected with colonizations in Africa and the islands of Australasia.      (b) Continent of Africa, Australasia. Special lesions on climate and rainfall.      (c) The relation of the blood to health. Effects of narcotics and alcoholic stimulants upon organs and processes of digestion and circulation.      (d) Suitable selections (see list).</p>
		<p><b>6<sup>4</sup></b></p>

	Group I. (.33)	Group II. (.16)	Group III. (.16)	Group IV. (.16)	Group V. (.20)
7	<p>(a) As in fourth grade.</p> <p>(c) As in fourth grade.</p> <p>(d) As in fourth grade.</p> <p>(e) The sentence. Kinds of sentences. Subject and predicate.</p>	<p>(a) Insurance, commission, profit and loss, taxes.</p> <p>(b) Measurements and problems relating to angles.</p>	<p>(a) Study composite family, or grasses and grains.</p> <p>(b) General review of North America; United States, West Indies, South America. Special lessons in mathematical geography.</p> <p>(c) The composition and purity of air. Organs of respiration and their functions.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) (1) Topical study: American; Northmen; voyages and discoveries of Columbus, the Cabots and Vespucci.</p> <p>(2) Reading from early History of England.</p> <p>(b) Local town and county governments. Officials; by whom chosen; duties, etc.</p>	<p>(a) Drawings in any medium of plants and common objects. Illustrative drawing in other studies. Analysis of beautifully colored natural objects for color schemes.</p> <p>(b) Working drawings of common objects to scale.</p> <p>(c) Previous work continued. Exercises and songs in all keys.</p>
7 <sup>2</sup>	<p>(a) As in fourth grade.</p> <p>(c) As in fourth grade.</p> <p>(d) As in fourth grade.</p> <p>(e) Parts of speech. Phrases and clauses.</p>	<p>(a) Duties, interest.</p> <p>(b) Areas of surfaces of pyramid and cone.</p>	<p>(a) Study of coal series. Combustion: study of candle flame products.</p> <p>(b) General review of countries of Europe. Special lessons on commerce.</p>	<p>(a) (1) Topical study: Colonization of North America by Spaniards and French, with review.</p> <p>(2) Reading from History of Spain and France.</p> <p>(b) State government. Branches; function of each; officials, — by whom chosen; terms; duties.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) Study of famous paintings for composition of line and of light and shade or mass.</p> <p>(b) Design and manufacture of simple objects in paper, card or wood,—match safe, tooth pick holder, bracket, etc.</p> <p>(c) As in first quarter.</p>

<p>(a) As in fourth grade.          (c) As in fourth grade.          (d) As in fourth grade.          (e) Nouns and pronouns, — kinds and forms. Rules of syntax. Analysis of sentences.</p> <p>73</p>	<p>(a) Study typical marine animals, — starfish, oyster or clam, lobster or crab. Compare with vertebrates (fish), Composition of air, water and various foods.</p> <p>(b) General review of Asia and Africa. Special lessons upon colonies and colonization.</p> <p>(c) The relation of respiration to health with special reference to ventilation, disinfectants, exercise and clothing.</p> <p>(d) Suitable selections (see list).</p> <p>(a) Topical study of colonization in America by English. Reading from history of England to 1760.</p> <p>(b) Topical study of state government continued.</p> <p>(c) As in first quarter.</p>
<p>(a) As in fourth grade.          (c) As in fourth grade.          (d) As in fourth grade.          (e) Verbs — kinds and form. Rules of syntax. Analysis of sentences.</p> <p>74</p>	<p>(a) (1) Business transactions and accounts.          (2) Ratio and proportion.</p> <p>(b) Solid contents of frustum of pyramid and cone, and of sphere.</p> <p>(a) (1) Business transactions and accounts.          (2) Ratio and proportion.</p> <p>(b) Solid contents of frustum of pyramid and cone, and of sphere.</p> <p>(c) The vocal organs and their functions. Effects of stimulants and narcotics.</p> <p>(d) Suitable selections (see list).</p> <p>(a) Adaptation of natural forms to purposes of decorative design. Applications to initials, head and tail pieces, etc., in black and white and color. Complementary colors in design.</p> <p>(b) Working of wood in three dimensions.</p> <p>(c) As in first quarter.</p>

	Group I. (.33)	Group II. (.20)	Group III. (.12)	Group IV. (.15)	Group V. (.20)
8 <sup>1</sup>	<p>(a) As in fourth grade.</p> <p>(c) As in fourth grade.</p> <p>(d) As in fourth grade.</p> <p>(e) Kinds, forms and uses of adjectives, adverbs, prepositions and conjunctions. Analysis of sentences.</p>	<p>(a) Definitions, rules and formulas. Miscellaneous exercises.</p> <p>(b) Definitions, problems and theorems relating to angles and lines.</p> <p>(c) Algebraic, notation and simple problems. Addition and subtraction.</p>	<p>(a) Poisonous plants and trees.</p> <p>(b) Comparative study of climate and climatic influences.</p> <p>(c) The nervous system. Organs and functions.</p> <p>(d') Suitable selections (see list).</p>	<p>(a) (1) Topical study of United States history from 1783 to 1815. (2) Reading of English history to 1815, also of French Revolution.</p> <p>(b) Topical study of United States government continued. Election and appointment of officials. Terms of office. Duties. Civil service.</p>	<p>(a) Drawings in any medium of common objects. Illustrative drawings in other studies. Analysis of beautifully colored natural objects for color schemes.</p> <p>(b) Working drawings of common objects to scale.</p> <p>(c) Previous work continued. Three part exercises and songs. Introduction of minor scales.</p>
8 <sup>2</sup>	<p>(a) As in fourth grade.</p> <p>(c) As in fourth grade.</p> <p>(d) As in fourth grade.</p> <p>(e) Rules of syntax and applications. Analysis of sentences.</p>		<p>(a) Definitions, rules and formulas. Miscellaneous exercises.</p> <p>(b) Definitions, problems and theorems relating to angles, sides and areas of triangles and parallelograms.</p> <p>(c) Multiplication and division. Factoring.</p>	<p>(a) Lessons on cohesion, gravity and heat.</p> <p>(b) Comparative study of vegetation in different latitudes.</p> <p>(c) Relation of the nervous system to health, with reference to exercise, various kinds of work, rest, food and drink.</p> <p>(d) Suitable selections (see list).</p>	<p>(a) (1) Topical study of United States history from 1815 to present time. (2) Reading of English history to present time.</p> <p>(b) Principles of local government. Basis. Duties of citizens. Local questions discussed.</p> <p>(c) As in first quarter.</p>

<p>(a) As in fourth grade. (c) As in fourth grade. (d) As in fourth grade. (e) Rules of syntax and applications. Analysis of sentences.</p> <p>(a) Definitions, rules and formulas. Miscellaneous exercises.</p> <p>(b) Definitions, problems and theorems relating to similar polygons and circles.</p> <p>(c) Reduction of fractions. Resolving of equations with two unknown quantities.</p> <p>(d) Simple form of accounts.</p>	<p>(a) Lessons on light, sound and electricity. (b) Comparative study of winds and their effects. (c) Organs of the special senses; cere and training. (d) Suitable selections (see list).</p> <p>(a) Topical general reviews: such as American Indians; negro slavery; taxation; political parties; inventors; growth of territory; causes and results of wars in which United States was a party. Questions connected with current events.</p> <p>(b) Principles of state government; basis; object of laws; relation of each branch to each other; duties of citizens and of officials; state questions discussed.</p>	<p>(a) Drawings in any medium of children in interesting attitudes, and of details of interiors of buildings. Freehand perspective. Story of pre-Christian architecture and ornament. (b) Making of simple joints. (c) As in first quarter.</p>
<p>(a) As in fourth grade. (c) As in fourth grade. (d) As in fourth grade. (e) Rules of syntax and applications. Analysis of sentences.</p> <p>(a) Definitions, rules and formulas. Miscellaneous exercises.</p> <p>(b) Definitions, problems and theorems relating to prisms, pyramids, spheres, cylinders and cones.</p> <p>(c) Invention and evolution. (d) Simple form of accounts.</p>	<p>(a) Injurious insects; time and method of extermination. (b) Comparative study of states of society. (c) The effects of the use of narcotics upon respiration, nervous system and mental activity. (d) Suitable selections (see list).</p> <p>(a) Topical general reviews continued: the tariff; growth of industries; territorial expansion; civil service reform; steam; electricity. Questions connected with current events.</p> <p>(b) Principles of national government: the constitution; national questions; rights and duties of nations; war and arbitration.</p>	<p>(a) Adaptation of natural forms to purposes of decorative design. Applications in book covers, title pages etc. Complementary groups of colors in design. (b) Making of simple objects involving joints. (c) As in first quarter.</p>
<p>(a) As in fourth grade. (c) As in fourth grade. (d) As in fourth grade. (e) Rules of syntax and applications. Analysis of sentences.</p>	<p>(a) Definitions, rules and formulas. Miscellaneous exercises.</p>	

## A LIST OF BOOKS AND SELECTIONS.

Following are the lists of books and selections to which reference has been made in the foregoing course of studies. It is difficult to draw the line between books of literature and books of information. Some of the books classed as literature may not properly belong there by a strict definition of that term, and some belonging under both heads are for the sake of brevity placed under only one. The selections are intended for reading and memorizing by the pupils. Some of them may be used by teachers of the lower grades for reading to the children. The list is far from complete, and should be added to by the teachers as good selections are found.

*Books of Literature (Grades I., II. and III.).*

Æsop's Fables.	Nature in Verse (Lovejoy).
Alice's Adventures in Wonderland (Dodgson).	Nature Myths (Cooke).
Bible Stories, 2 vols. (Modern Readers' Bible Series).	Old Greek Stories (Baldwin).
Child Life in Verse (Whittier).	Old Stories of the East (Baldwin).
Children's Garlands (Patmore).	Old Testament Stories (Houghton).
Child's Garden of Verse (Stephenson).	Open Sesame, No. 1.
Christmas All the Year Round (Howells).	Poems for Children (Ewing).
Dream Children (Scudder).	Poetry for Children (Eliot).
Fables and Folk Stories (Scudder).	Poetry for Children (Lamb).
Fairy Tales (Andersen).	Poetry of the Seasons (Lovejoy).
Fairy Tales (Grimm).	Rainbows for Children (Child).
In the Child's World (Poulsson).	Stories for Children (Wiggin).
Jungle Book (Kipling).	Stories for Children (Lane).
Kindergarten Stories (Wiltse).	Stories of King Arthur (Hanson).
	Sunshine Land (Thomas).

*Selections of Literature for Reading and Memorizing (Grades I., II. and III.).*

Calling the Violets (Larcom).	Stop, Stop Pretty Water (Follen).
Christmas Bells (Longfellow).	Sweet and Low (Tennyson).
Daffodils (Wordsworth).	Thanksgiving Day (Child).
Hiawatha's Childhood (Longfellow).	The Baby (MacDonald).
Lady Bird (Southey).	The Bee and the Flower (Tennyson).
Lady Moon (Lord Houghton).	The Brook (Tennyson).
Little Dandelion (Bostwick).	The Brown Thrush (Larcom).
Little Kitty (Prentiss).	The First Snowfall (Lowell).
Little Things (Anonymous).	The Night Before Christmas (Moore).
Mountain and the Squirrel (Emerson).	The Spider and the Fly (Howitt).
New Year's Eve (Andersen).	The Frost Spirit (Whittier).
One by One (Procter).	The World (Lilliput Levee).
Rain in Summer (Longfellow).	The Lamb (Blake).
Seven Times One (Ingelow).	We are Seven (Wordsworth).
Spring (Thaxter).	Who Stole the Bird's Nest? (Child.)

*Books of Information (Grades I., II. and III.).*

All the Year Round, 4 vols. (Strong).	My Saturday Bird Class (Miller).
American Life and Adventure (Eggleston).	Nature Stories (Bass).
Aunt Martha's Corner Cupboard (Kirby).	Nature's Byways (Ford).
Brooks and Brook Basins (Frye).	Queer Little People (Stowe).
Child's Book of Nature, Vol. 1 (Hooker).	Rab and His Friends (Brown).
Friends in Feathers and Fur (Johonnot).	Seed Babies (Morley).
Grandfather's Stories (Johonnot).	Stories for Children (Hale).
Historic Boys and Girls (Brooks).	Stories of Animal Life (Bass).
Learning About Common Things (Abbott).	Stories of Plant Life (Lane).
Little Folks in Feathers, etc. (Miller).	Stories of Colonial Children (Pratt).
Little Folks of Other Lands (Chaplin).	Stories of Massachusetts (Hale).
Madam How and Lady Why (Kingsley).	Stories Mother Nature Told (Andrews).

*Books of Literature (Grades IV., V. and VI.).*

Among the Hills (Whittier).	Old Greek Stories (Baldwin).
Ballads of New England (Whittier).	Old Stories of the East (Baldwin).
Bible Stories (Modern Readers' Bible Series).	Open Sesame, No. 2.
Cricket on the Hearth (Dickens).	Popular Tales from the Norse (Dasent).
Gods and Heroes (Francillon).	Rab and His Friends (Brown).
Grandfather's Chair (Hawthorne).	Robinson Crusoe (Defoe).
Gulliver's Travels (Swift).	Six Tales from Arabian Nights (Eliot).
Hiawatha (Longfellow).	Stories of the Iliad and Odyssey (Church).
King of the Golden River (Ruskin).	Swiss Family Robinson (Wyss).
Little Daffydowndilly (Hawthorne).	Tanglewood Tales (Hawthorne).
Little Lord Fauntleroy (Burnett).	Tent on the Beach (Whittier).
Merry Adventures of Robin Hood (Pyle).	The Birds' Christmas Carol (Wiggin).
New England Legends, etc. (Drake).	Water Babies (Kingsley).
	Wonder-Book (Hawthorne).

*Selections of Literature for Reading and Memorizing (Grades IV., V. and VI.).*

Abou Ben Adhem (Hunt).	Marjorie's Almanac (Aldrich).
A Child's Thought of God (Mrs. Brown-ing).	My Playmate (Whittier).
All Things Beautiful (Alexander).	Paul Revere's Ride (Longfellow).
Barbara Frietchie (Whittier).	Pegasus in Pond (Longfellow).
Barefoot Boy (Whittier).	Queer Little People (Stowe).
Belle of Atri (Longfellow).	Robert of Lincoln (Bryant).
Building of the Ship (Longfellow).	Sheridan's Ride (Read).
Cassabianca (Hemans).	Snowflakes (Longfellow).
Children (Longfellow).	Spring Has Come (Holmes).
Christmas Carmen (Whittier).	Story Hour (Wiggin).
Daybreak (Longfellow).	The Arrow and the Song (Longfellow).
Do All that You Can (Sangster).	The Brook and the Wave (Longfellow).
Flower in the Crannied Wall (Tennyson).	The Battle of Blenheim (Southey).
From My Arm Chair (Longfellow).	The Birds' Christmas Carol (Wiggin).
Grandmother's Story (Holmes).	The Building of the Ship (Longfellow).
Gulliver's Travels (Swift).	The Little People of the Snow (Bryant).
Hiawatha's Friends (Longfellow).	The Gladness of Nature (Bryant).
Hiawatha's Sailing (Longfellow).	The Rainy Day (Longfellow).
How the Leaves Came Down (Coolidge).	The Sandpiper (Thaxter).
In School Days (Whittier).	The Bugle Song (Tennyson).
Landing of the Pilgrims (Hemans).	The Village Blacksmith (Longfellow).
Leak in the Dike (Cary).	The White-footed Deer (Bryant).
March (Larcom).	The Yellow Violet (Bryant).
	Wreck of the Hesperus (Longfellow).

*Books of Information (Grades IV., V. and VI.).*

A-Hunting of the Deer (Warner).	Indian History for Young Folks (Drake).
A Man Without a Country (Hale).	In Brooks and Bayou (Bayliss).
Around the Hub (Drake).	Old Times in the Colonies (Coffin).
Birds and Bees (Burroughs).	Our Fatherland (Carver and Pratt).
Biographical Sketches (Hawthorne).	Pilgrims and Puritans (Moore).
Black Beauty (Sewell).	Seven Little Sisters (Andrews).
Boys of '76 (Coffin).	Sharp Eyes (Burroughs).
Boys of '61 (Coffin).	Stories of American History (Pratt).
Building the Nation (Coffin).	Stories of Great Americans (Eggleston).
Cast Away in the Cold (Hayes).	Stories of Greece (Guerber).
Children of the Cold (Schwatka).	Stories of Our Country (Johonnot).
Child's Book of Nature, Vol. 2 (Hooker).	Stories of the Old World (Church).
Claws and Hoofs (Johonnot).	Stories of the Romans (Guerber).
Curious Homes, etc. (Beard).	Ten Boys who lived on the Road from
Each and All (Andrews).	Long Ago till Now (Andrews).
Fairyland of Flowers (Pratt).	Ten Great Events in History (Johonnot).
Fairyland of Science (Buckley).	The Boy's Froissart (Lanier).
Five Little Peppers (Sidney).	The Boy's King Arthur (Lanier).
Geographical Reader (Scribner).	The Children's Crusade (Gray).
Geographical Readers (Philips).	The Story of the Birds (Baskett).
Geographical Readers (King).	True Stories from New England History
Hans Brinker and Silver Skates (Dodge).	(Hawthorne).
Historical Readers (Gilman).	Our Own Birds (Bailey).

*Books of Literature (Grades VII. and VIII.).*

Ben Hur (Wallace).	Marmion (Scott).
Bunker Hill Orations (Webster).	Merchant of Venice (Shakespeare).
Cape Cod (Thoreau).	My Hunt after the Captain (Holmes).
Character (Smiles).	Patriotic Reader (Carrington).
Christmas Carol (Dickens).	Peasant and Prince (Martineau).
Courtship of Miles Standish (Longfellow).	Pilgrims Progress (Bunyan).
Enoch Arden (Tennyson).	Selections from the Alhambra (Irving).
Evangeline (Longfellow).	Selections from Ruskin.
Feats of the Fiord (Martineau).	Self Help (Smiles).
Greek Heroes (Kingsley).	Snow Bound (Whittier).
Idylls of the King (Tennyson).	Tales from Shakespeare (Lamb).
Ivanhoe (Scott).	Tales of a Wayside Inn (Longfellow).
Jason's Quest (Lowell).	Tales of the White Hills (Hawthorne).
Julius Caesar (Shakespeare).	The Talisman (Scott).
Kenilworth (Scott).	Tom Brown at Rugby (Hughes).
Lady of the Lake (Scott).	Uncle Tom's Cabin (Stowe).
Legends of New England (Hawthorne).	Vicar of Wakefield (Goldsmith).
Magna Charta Stories (Gilman).	Vision of Sir Launfal (Lowell).

*Selections of Literature (Grades VII. and VIII.).*

Address at Gettysburg (Lincoln).	Christmas Carol (Dickens).
Among the Hills (Whittier).	Chambered Nautilus (Holmes).
An Invitation to the Country (Bryant).	Duty (Emerson).
Belfry of Bruges (Longfellow).	Excelsior (Longfellow).
Bells of San Blas (Longfellow).	Freedom (Lowell).
Charge of the Light Brigade (Tennyson).	Good Cheer (Bronté).
Concord Hymn (Emerson).	Gradation (Holland).



